

Course Number	401.667	Course Name	Advanced Theory of Concrete Plasticity	level	Graduate	
Professor	Hong Sung Gul			HomePage: goozo.snu.ac.kr		
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	Course Meeting Times : Seoul Nat'l Univ 39-432					
Objective and Approach	The main objective of this course is to provide students with an advanced knowledge of the design and plastic character of reinforced concrete through understanding of material and structural behavior.					
Course Description	This course is offered to graduate students. Topics covered include: Strength and Deformation of Concrete under Various States of Stress; Failure Criteria; Concrete Plasticity; Fracture Mechanics Concepts; Fundamental Behavior of Reinforced Concrete Structural Systems and their Members; Basis for Strut-and-tie model; Yield Line Theory;					
Course Textbook	Nielsen, N. P. Limit Analysis and Concrete Plasticity. 2nd ed. New York, NY: CRC Press, 1999. Nilson, A. H., D. Darwin, and C. W. Dolan. Design of Concrete Structures. 13th ed. McGraw-Hill, 2004. James G. MacGregor and James K Wight. Reinforced Concrete Mechanics and Design 4 th ed, in SI unit					
Grading Policy	Attendance	Homework	Midterm Exam	Final Exam	Participation	
	10%	20%	25%	35%	10%	100%
Calendar	LEC#	Topics			Key Dates	
	1	Introduction; Design Criteria for Reinforced Concrete Structures Chapter 1. theory of plasticity				
	2	Stress-strain Behavior in Multiaxial Loading Chapter 2. Yield conditions			Homework 1	
	3	Design of Disks				
	4	Chapter 3. The theory of plain concrete			Homework 2	
	5	Fracture Concepts Chapter 4. Disks				
	6	Strut and Tie models			Homework 3	

	7	Midterm Exam	
	8	Chapter 5. Beams	
	9	Shear Design Beams on Torsion	Homework 4
	10	Chapter 7. Punching shear of slabs	
	11	Chapter 8. Shear in joints	
	12	Shear Failures	Homework 5
	13	Chapter 9. The bond strength of reinforcing bars	
	14	Yield Line Theory for Slabs	
	15	Final Exam	